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## DEVELOPMENT OF CHARGED-PARTICLE EMISSION DDX SPECTROMETER WITH SSD TELESCOPE AND PENCIL-BEAM DT NEUTRON SOURCE

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Charged particle emission DDX is quite crucial physical quantity for fusion reactor development. At present, the measurement can be carried out by various methods based on a variety of detection techniques. However, generally speaking, the accuracy is not so good because the measurement possesses hard conditions of high background, low cross section and thus bad S/N ratio. In the present study, a telescope system with two SSDs of  $\Delta E$  and  $E$  was developed, and to catch the target particle the discrimination of measured particles was conducted from two-dimensional contour of the two detectors. The important point of the present spectrometer is utilization of the pencil-beam DT neutron source of FNS of JAERI. Under the abovementioned experimental conditions, the background level is kept to be quite low and a high S/N ratio can be expected, even if the telescope is arranged very close to the measuring sample. Also normally the measurable lower energy limit is around several MeV for alpha particle. But, in the present telescope spectrometer the lower measurable energy below 1 MeV was successfully achieved by employing the anticoincidence alpha spectrum of  $E$  and  $\Delta E$  detectors as the spectrum below the energy range of the standard limit of several MeV. This is because (1) the thickness of delta-E detector is thin and thus the energy loss of proton in the detector is suppressed up to about several hundreds keV, and (2) the background alpha particle in case of sample-out measurement is exceptionally low. The validity of the spectrometer has been confirmed through the experiment with an aluminum sample. Recently the measurement of beryllium, which is regarded as one of the most important materials in fusion reactor, has been performed. The preliminary result of it is to be described in the Conference.